**Reg. No. \_\_\_\_\_\_\_\_**

**Karunya University**

**(Karunya Institute of Technology and Sciences)**

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec 2016**

**Subject Title: DATA STRUCTURES Time: 3 hours**

**Subject Code: 09CS208/12CS207/CS246 Maximum Marks: 100**

#### **Answer ALL questions**

**PART – A (10 x 1 = 10 MARKS)**

1. Stack is \_\_\_\_\_\_\_\_\_\_\_\_.
2. What is the answer for the following expressions? P = 6 5 2 3 + \* +
3. A \_\_\_\_\_\_\_\_\_\_\_ is an ordered set consisting of a variable number of elements to which insertion and deletions can be made.
4. How is a queue different from a stack?
5. Which sort is used in external sorting algorithm?
6. Mention the time complexity of the linear and binary search.
7. Give the pre-order traversal for the expression a \* b + c / d ^ e \* g – f.
8. The representation of a data structure in memory is known as \_\_\_\_\_\_\_\_\_\_\_.
9. Breadth First search is used in\_\_\_\_\_\_\_\_\_\_\_\_.
10. What is the minimum number of edges for a graph with seven vertices to be connected?

**PART – B (5 x 3 = 15 MARKS)**

1. Mention the applications of Stack.
2. List the advantages of circular linked list.
3. What are the disadvantages of the internal sorting?
4. Differentiate between Binary Tree and Binary Search Tree.
5. State the properties of a graph.

**PART – C (5 x 15 = 75 MARKS)**

1. Write an algorithm for transformation of infix to postfix expression and explain with an example.

(OR)

1. Write a C program to perform the following operations on stack. PUSH and POP.
2. Write an insertion and deletion algorithm for doubly Linked List. Explain with an example.

(OR)

1. a. Explain array implementation of queues. (7)

b. Sort the following numbers using Bubble Sort. 54, 26, 93, 17, 77, 31, 44, 55, 20. (8)

1. Write an algorithm for Insertion sort with example.

(OR)

1. Write an algorithm for Quick Sort and explain with example.
2. What is BST? Write an insertion algorithm and explain with examples.

(OR)

1. Formulate an algorithm to insert into a height balanced tree. Illustrate insertion with an example.
2. Explain Breadth first and Depth traversal of a graph.

(OR)

1. Explain the shortest path algorithm with an example.